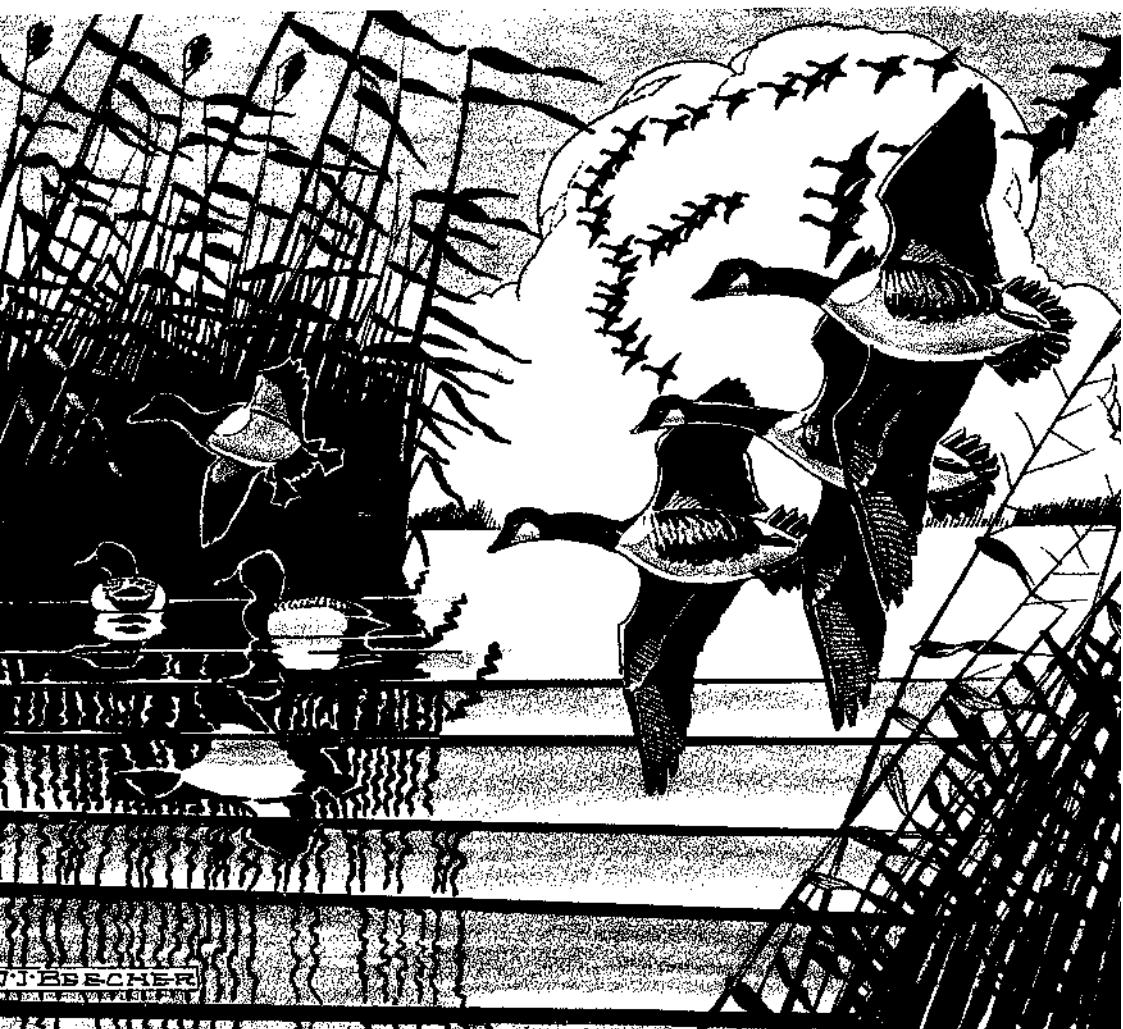


The CHICAGO NATURALIST



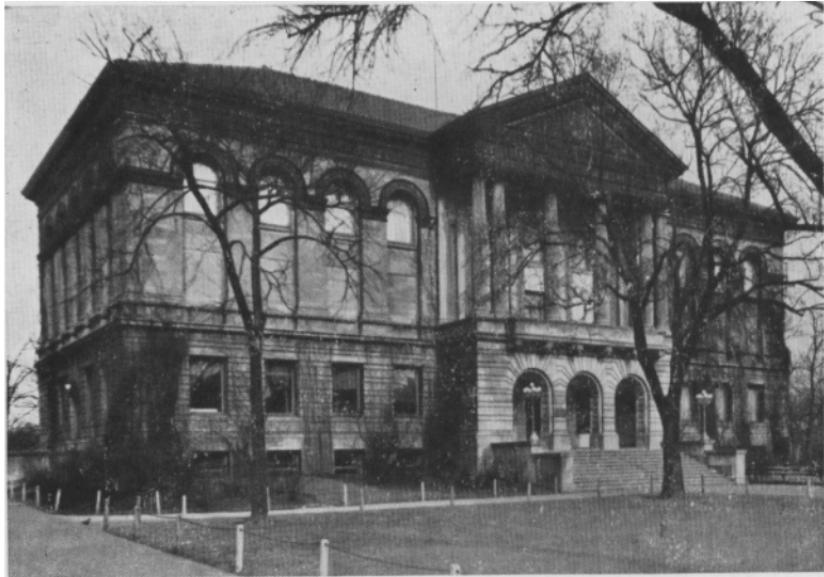
Published by

**THE CHICAGO ACADEMY
OF SCIENCES**

VOL. 5 • NO. 3

• • •

OCTOBER • 1942



The Chicago Academy of Sciences

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THE CHICAGO ACADEMY OF SCIENCES
Lincoln Park • Clark Street and Ogden Avenue

VOLUME 5

NOVEMBER, 1942

NUMBER 3



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**BUY WAR BONDS
AND STAMPS**

The Kankakee Area—its Past and Present

MARCUS WARD LYON, JR.

When the first Asiatics reached North America by way of Bering Strait or Isthmus and so wended their way eastward, is unknown. It was probably twenty to fifty thousand years ago, and the face of nature was quite different than it is today. It is probable that the ice had not yet receded from Lake Michigan when the first humans strayed into that region. The Kankakee was not a river, but a glacial lake of considerable size separated from old Lake Chicago by a narrow strip of land, probably sandy. The headwaters of the lake at that time were up by Dowagiac, Michigan. Streams from there carried water into the lake, the lake drained into the Illinois River, thence into the Mississippi River system. Later the St. Joseph River was formed



The Kankakee today near the Illinois-Indiana line.

and flowed into Lake Michigan, separating the Kankakee from its sources around Dowagiac. No doubt the Kankakee was in part covered with ice much of the year. Gradually the Kankakee shrank, the whole region occupied by it became a famous marsh traversed by water courses which had their drainage into the Illinois River.

The first white men to explore the district were French voyageurs who came down Lake Michigan, thence up the St. Joseph River to about the northern limits of South Bend, at which point they made a portage of a few miles to gain the headwaters of the Kankakee, thus

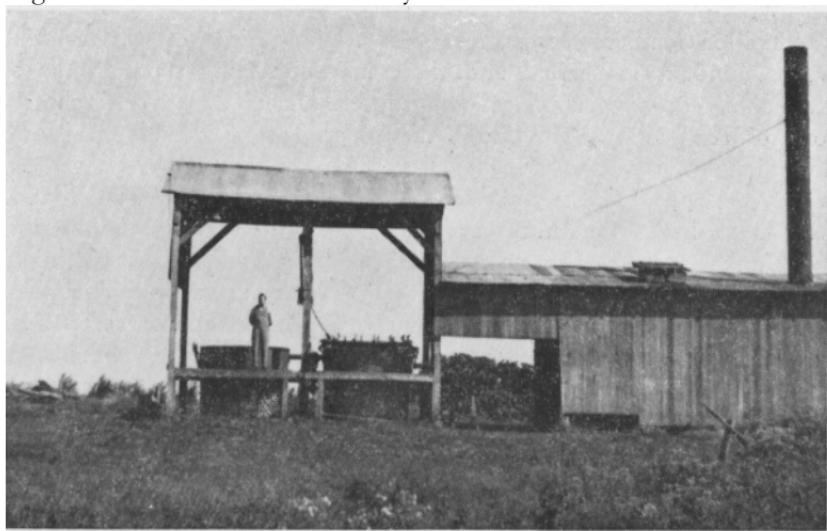
to continue their voyages down the Mississippi. The area in those days was one vast swamp and wilderness. The early explorers named the river the Theakiki, probably an Indian name since corrupted into the familiar Kankakee.

Long before the white men discovered the region, at the close of the glacial period, probably the early aborigines of North America were familiar with it. Or, if they were not, at any rate many of the Pleistocene mammals of that time occupied it. The solid-horned musk-ox, *Symbos cavifrons*, has left its remains there, the finest example coming from the little city of Hebron. Still other examples of it are known. Mastodon remains have been removed from the marsh. Why they died and disappeared, is a mystery. It is inconceivable that primitive man played much of a role in their destruction. Other smaller Pleistocene mammals probably lived in the region, but their remains are fragmentary and have not been preserved. One of the most interesting mammals to be taken out of the marsh is the skull of the moose deer, *Cervalces*, now deposited in the National Museum. Some of the deposit in which this cranium was found was analyzed for different kinds of pollen by Professor J. E. Potzger of Butler University. His findings give some idea of the forests at that time. The trees were about 75 percent fir and spruce about thirty thousand years ago. Today they are mostly hardwoods with some pine and tamarack.

The white men found the country populated by an assemblage of animals which would seem strange indeed today. The ponderous buffalo was fairly common, described by the voyageurs as a large ox. The park-like banks of the St. Joseph River were favored breeding grounds and resting places for the cows at calving time. They were termed *parcs aux vaches*, a name which has been corrupted into Parkovash and bestowed on one of the streets of South Bend. These wild oxen wandered over the islands found in the Kankakee Swamp and were one of the interesting sights that the eyes of the Frenchmen beheld when the river was first discovered.

Next in size inhabiting the area were what the voyageurs termed the stags, now popularly called the elk. No remains of these stags are known except one pair of antlers in the possession of H. F. Goppert of Walkerton, who with his companions fished them out of one of the tributaries of the Kankakee when he was seining for fish one night many years ago. Deer were abundant. Some of the old stories related their being killed with pitchforks in the cold winter season and the meat put away for future use. Today these are all gone. The only specimen of a deer that I know from that region is a mounted head of an animal killed about seventy years ago, this head now adorns the barber shop of Robert Hawblitzel of North Liberty.

Where there was so much meat, there must necessarily have been some one to eat it. Old histories tell about cougars that inhabited this region. Not only were these giant cats present, but the smaller wild-cats, probably both the rufous and the Canada lynx. The coyote still persists, but the timber wolf is extinct. Smaller mammals were there in abundance: otters and beavers, the favored animals for the early trappers. The beaver was soon exterminated, but otters persisted until about 1893, about the same time the deer also disappeared. Porcupines probably were found in the region, but little mention in histories is made of them. The only mammal of any size and importance to survive is the muskrat. Its houses are still found in a few selected places along the old river or the old Lake Kankakee. Smaller fry like squirrels, rabbits and mice persisted in abundance until the last quarter of a century, when they have been gradually reduced in numbers, although some are still found there today.



A peppermint still.

The early settlers were keen to observe the fertility of the soil of the Kankakee Marshes. A number of years ago the region was exceedingly well drained so that the old marsh is no longer there. As for the lake, that disappeared ages ago. Among the crops raised today on what was a wilderness and swamp one of the chief is peppermint. As one drives over the well-made roads through what once was a swamp he sees peppermint stills, cords of wood for firing and distilling the valuable oil.

One can well imagine that a country so thoroughly watered and so swampy as was the Kankakee land, was thickly inhabited by water-

fowl, coots, ducks, geese, and swans, which came to rest temporarily on their migrations north and south. Certain species, grebes, some ducks, herons, bitterns, et cetera, stayed to breed, but those days are gone. Waterfowl are mentioned in histories as swarming over the whole area.

Histories even tell of wild turkeys being present on the islands of the swamp ; but the only turkeys one sees now are those hastening to get on the other side of the road as one drives along in a modern motor car.

The passenger pigeon, which is now gone forever from anywhere in North America, was abundant. It is sad to contemplate the destructiveness of man with respect to nature. Man was not entirely alone in this destruction, for it is the nature of glaciated regions to dry up. From the days of the old Lake Kankakee of the glacial period to the modern times when the Kankakee is reduced to a well drained ditch, is a far cry.

Smaller feathered creatures, such as blackbirds of various kinds were abundant in season, and there are interesting spots in the old Kankakee course where red-winged blackbirds sing their cheerful song of *conk-ker-re-e-e*. Crows are mentioned in the older histories, and they still remain. Much of this area could have been saved as a wilderness, had not the drainage plans gone through. We still could have had a haven for ducks, geese and other waterfowl on the meandering Kankakee, had not man interfered. Deer could have been hunted there today for a few days each year. The area was vast enough, in fact it is so wild today that even coyotes inhabit it, and one often reads glowing accounts in the newspapers of the wolves that have been killed. Probably in the old days real timber wolves were found there, but today only their lesser cousin exists. Man has always been a great destroyer of everything alive including himself. His motto seems to be not to preserve nature, but to destroy it.

The editors consider it a privilege for *The Chicago Naturalist* to have this article by Dr. Lyon, one of the country's leading figures in pathology and mammalogy. Shortly before his death early this year, Dr. Lyon, a resident of South Bend, Indiana, was elected an Honorary Member of the American Society of Mammalogists.

For a detailed account of the geography and land utilization of the Kankakee, see MEYER, ALFRED H., "The Kankakee 'Marsh' of Northern Indiana and Illinois," *Papers Mich. Acad. Sci., Arts, Let.*, vol. 21 (1935), 1936, p. 359-396.

Leaves out of a Jungle

T. H. EATON, JR.

The old Ancon, her last voyage from New York to Panama finished, steamed into Limon Bay early in the morning. The shore is low and green there, where the Panama Canal meets the Caribbean. With all the other newcomers on board I strained at the rails trying to see something exotic and tropical about it. Beyond roll the hills, almost mountains, over which Balboa and Pizarro struggled and sweated in their armor four hundred years ago. Did the man-o'-war birds and the pelicans soar about the Spanish galleons as about the Ancon ? No doubt, and for ages before that, but history means less to a bird than to us. We find ourselves wondering what Pizarro did with ants inside his armor.

James Zetek, government entomologist of the Canal Zone and custodian of the jungle island, Barro Colorado, met the Chickering (father and son, spider-hunters) and me at the dock in Cristobal. He shooed us through the customs inspection, hustled us over to the sultry commissary building to buy five dollars' worth of coupons for whatever merchandise we might or might not want later, and rushed us to the eleven o'clock train bound for Frijoles ("beans").

Through lush swampy country we rode for half an hour, past Gatun Locks and along Gatun Lake, the huge artificial reservoir which literally floats the Panama Canal between the locks at either end. Francisco Vitola, properly called Chichi, took us from Frijoles by launch to the unspoiled jungle sanctuary of Barro Colorado, crossing the main body of the lake barely ahead of a tropical rain-squall. Barro Colorado is a half-drowned hilltop, six square miles of virgin rain-forest, perpetually set aside for scientists to study in seclusion the myriads of animals and plants of the American tropics.

As soon as I could decently escape the formalities of arrival I hurried into the jungle and then got off the trail and lost my way immediately. Everyone who comes to stay at the island is provided with a map, but if you don't know where you are on the map it is no great advantage. I was in a state of bliss, nevertheless, and didn't care whether I returned to headquarters the same day or not.

For here was The Jungle ! All my life I had wanted it, had craved it through cold northern winters, read about it, written about it. And now came the monkeys, capuchins or white-faces, running along the branches, leaping from tree to tree, stopping to make faces and chatter at me. Off in the distance sounded thunderous echoing roars, which I knew were the black howlers. At last I returned with more luck than skill to the trail and back to civilization in time for supper, full to bursting with all the good things seen and heard in the forest.

Among my prizes I carried a green "walking stick" insect which lay on the underside of a big leaf, parallel with the midrib which it perfectly resembled. I soon found out that it does not pay to let pass anything seen on the first day, in expectation of seeing plenty more later, for you may never find it again. One such loss was an enormous grasshopper, fully five inches long, whose wickedly spined legs could draw blood at every kick. No more of these did I meet all summer. Some people would say "Who'd want to?" but this was a genuine curiosity, a symbol of tropical life in its overgrown exuberance, and I regretted not capturing it.

One day Chichi took the Chickerings and me on a cruise halfway around the island to Fuertes House, a little forest cottage on stilts at the head of a deep inlet. There are six of these retreats scattered about Barro Colorado, usually at the end of trails that wind through the jungle from the laboratory. Fuertes House, named for the famous bird artist, stands on a knoll overlooking the inlet, a beautiful spot. With a box of food, an oil-stove and cots we were prepared to stay the night there.

I noticed footprints of an ocelot, a shy jungle cat with a coat of spots and rings, in wet sand where a little brook trickled down to the inlet below the knoll. But never during the summer did I catch a glimpse of an ocelot. They, like the pumas and jaguars, hide by day and wander abroad only after dark.

While the Chickerings plunged into their spider campaign, laying out a big tarpaulin beneath overhanging bushes and then heating these with sticks to shake off whatever small beasties might lurk therein, I wandered along Nemesia trail. All the trails are named so that you can say where you've been. I stopped to rest on some stones by a small brook. Great iridescent blue morpho butterflies sailed by at intervals, always following the avenue of the glade through the trees, along the stream. Sunlight filtered down and mottled the ground. Tiny black skippers, the commonest butterflies on the island, danced by twos and fours and sixes in bright spots here and there. Away in the woods occasional birds called, or a cicada would sound off like a steam whistle. Trees of a hundred kinds rose all about me and I knew not one. But I didn't care. The names men give to these things are only names. There are times when seeing them is all that matters. Here I could sit and watch and listen in utter contentment. I could stretch the minutes out forever. It was warm, no air stirred, no rain threatened, no dinner-gong would sound, nobody would come along the trail.

Small boys know what I mean. That glade will live long in my memory, for I can always bring it back, see again most of its beauty and quietness, remember some of the birds, conjure up a few of the ferns, shrubs, dripping mosses, and lacy limbs of the tree-canopy.

I came back then and swam in the lagoon. One does not drink the water of Gatun Lake because of the contamination from settlements all around. Typhoid and dysentery lurk there. But if you keep your mouth shut and indulge in no fancy strokes there is little risk. Crocodiles also hide in the shallows of the lake. We saw one at dusk sculling slowly across where I had been swimming. But they are no longer abundant nor very large, and as no one had frightened me as a baby with tales of crocodiles I have never bothered to fear them. Alligators, by the way, do not come this far south, not even into Central America. Only crocodiles and caimans, which are almost the same, represent their tribe here and in South America.



Buttressed tree-trunks and climbing vines are characteristic of jungle vegetation.

The water was full of small fish and transparent glass-like prawns, which look much like shrimps. With a dipper I seined three pipe-fish. This, although I had not been first to discover them, was extraordinary, for the pipe-fishes are ostensibly marine fishes only, and simply should not be seen in fresh water at all. Certainly they must not have occurred in the Chagres River and its tributaries before Gatun Lake was created. Yet the lake is 85 feet above the sea, separated from it by the locks of the canal. Evidently this is what happened. The lower locks, being opened to let a ship climb up to the lake, filled, of course, with salt water and sea fish. Then the gate was closed, water from the lake poured in to fill the lock, and as the ship rose the sea water became more and more brackish, diluted with lake water. No doubt all of the fish

found this most distressing, but the pipe-fish kept their chins up. Then as the upper gate opened and the ship steamed out into Gatun Lake a few groggy pipe-fish, suddenly exposed to unadulterated lake water, muddled along after it and succeeded in maintaining themselves. Gradually they became more comfortable and spread to all the weedy shallows where they are now fairly abundant, the only marine fishes known to be naturalized there.

Two of my three were males. They have the peculiar habit, like sea-horse males, of carrying the eggs around in a pouch on the belly until they hatch. The females have nothing to do with the custody of their children but think only of themselves, a prerogative usually given to males.

These were full days. Next morning I tried another trail, where the trees and underbrush were more crowded with birds, and two playful toucans, the big yellow-breasted birds with beaks like bananas, dove down out of sight in the trees like falling airplanes, calling "*Kreck! Kreck!*" as they went—a typically dissonant bird-voice of the tropics, where most birds have harsh voices. At least most of them are supposed to, but the number of kinds is great, and there are some marvellous singers among them. It is an unfortunate handicap that we have no way of writing a bird-song so that one who reads it will hear it in his own mind. Musical notations are of some value but seldom tell the whole story. To invent words to simulate the song also works for a few birds, like the owl with its ``Who-who-who-who-oor It seemed to me just like the barred owl of the north. Almost everywhere I heard the persistent "*Coo-000!*" of a dove, without seeing its maker. But what am I to do with some unknown bird that calls rapidly /----- /,-----/ and then repeats itself in a higher key like an echo ? There is another that sounds as if it were being choked with water and trying to squawk and gargle at the same time. No signs ever invented will express that on paper.

After noon I started back across the island towards the laboratory, while the spider men waited for Chichi and the launch on account of their burdensome equipment. About a hundred yards on my way I ran across a battalion of little brown army ants swarming over the ground. They were small fry, but as they covered densely an area a yard wide and several yards long they drove out every living thing in their way. At the van they scattered insects, tree-frogs and other inhabitants of the fallen leaves in every direction, most of these escaping with their lives by prodigious leaps. A cockroach took the wrong aim in a short flight and landed in the midst of the ants. Instantly they covered it in multitudes and tore it to pieces. All the ants that got some carried it back to their underground bivouac, for these little fellows, only a quarter of an inch long, camp between forays under the

surface in tunnels and chambers, unlike the larger red army ants. Accompanying the advance guard of this battalion was a swarm of slender, darting flies. They pursued in a bee-line every insect, even every tree-frog, that sprang or flew to safety, and as soon as it landed they returned to wait for the next. What they intended I do not know ; a heavy rain began just then and I headed once more for the laboratory.

When I reached there two of the men had found a sloth up a tree, and all of us went out after supper to watch the fun. To biologists this does not mean anything in the nature of a cock-fight, but just a chance to poke and scrutinize and make sarcastic remarks on our humbler brethren. The sloth was down the tree by this time. It seemed as if nothing more weird than this had ever been invented among animals.



A prehensile-tailed porcupine.

Imagine a little, scrawny, long-legged bear, covered with greenish hair as coarse as straw, moving with the lethargy of a slow-motion picture slowed down almost to stopping, expressing itself with the emotional vigor of a sigh, and with its hair swarming with moths, and you have part of a sloth. It is not, incidentally, related to a bear. Add to these things the fact that it cannot stand on the ground but sprawls out as if crippled, and the handicap of great sickle-shaped claws, three on each foot in this species, which get in its way all the time except when climbing, and you realize some of the extreme limitations

imposed on animals which insist on adapting themselves to one and only one way of life. The limitations of some men probably come the same way.

As none of us wanted to get into the grip of those claws we packed the beast in a big canvas and carried it down to the laboratory for a few days of observation. Sloths, we found, do not spend all their time hanging upside down on branches of trees. If they did it would be a little difficult to go from one tree to another, or to climb higher or lower on the same tree ; sloths even swim occasionally. So far as happiness is theirs, they woo it most in a slanting position. Their preference in trees is the cecropia. They eat practically nothing else but its leaves, which are huge and deeply cleft.

The sloth acts like a sleepy man with all eternity before him to do with as he likes. With immense deliberation it carefully extends one arm forward and feels the handhold ; if satisfied it will gradually clamp down with the claws, and then, if it has not forgotten where it is going, may eventually bring up the other arm. Sometime later it may relax its hind feet, edging one of them forward as if in the last stage of paralysis, and shift its weight delicately a few inches ahead. Then some glimmer of an idea may flicker across its mind, and it will bend its head around, little by little, and look the other way. Perhaps now it decides to go to sleep. The claws simply lock in place and the leg muscles remain rigid, the whole weight of the animal depending on them, and it sleeps. This, I submit, no animal but a sloth could do. I have seen it sleep in a half-vertical position on the side of an upright post, held there only by the strength of its hind feet, clamped around the post.

At length the time came to let the sloth go. Several of us stood around and snapped pictures of it first, clinging to the top of a high forked pole that we had set up. To induce a sloth to pose is a task reminiscent of physical and verbal combats with a mule whose opinions are fixed. Fully fifteen minutes we labored to get the beast to stretch across from one side of the fork to the other, which it could have done without the slightest trouble, and by then the daylight had become poor enough to make flash bulbs necessary. In a canvas I carried the martyr down to the nearest cecropia tree and laid it against the trunk, helping it to get the feeling of the situation and appreciate its freedom by setting its claws in place for a dash upward. Then we watched. The "dash" to a height of fifty feet consumed nearly thirty minutes, hand over hand, foot over foot, before our sloth at last vanished into dense clusters of the fan-like leaves. And whether it became a permanent fixture hidden in that tree, or by some violent impulse managed to get down and find its way somewhere else we never knew, for that was the last we ever saw of it.

A Method of Fishing Used by Water Snakes

PHILIP D. EVANS

On numerous occasions while collecting snakes at night with the aid of a strong light, it has been possible to make observations on some of the feeding habits of water snakes. A peculiar method of obtaining food is employed and the following is an attempt to describe it.

The first and most complete observation was made in August of 1926 in a swamp about ten miles east of New Orleans, Louisiana. Not being well prepared for collecting, without boots or waders, my two companions and I found that the swamp presented a rather difficult situation. A road, little more than a wagon track, led through the cypress and crossed a strip of swamp water ten or twelve feet wide and probably two or three feet deep. The crossing was provided with a poorly constructed board bridge that cleared the water by only a few inches. Because of our lack of wading equipment, we took advantage of this bridge and tried to locate reptiles from this point.

Shining a five-cell flashlight on the water for about five minutes revealed a large water snake writhing in the water near the surface and gradually approaching our position. We watched the convulsive movements of the snake until it was within arm's reach at which time it was captured and placed in the collecting bag. Anxiety to collect the first specimen was at the expense of closer observation, but it was only a short time until a second snake was observed and the peculiar action of the animal was noted to be the same as that just witnessed. We watched this snake more carefully to determine the reason for this behavior. The head was submerged and the mouth kept open wide as it swept through the water from one side to the other in a continuous series of figure eights, the entire body following the path of the head. Schools of minnows or other small fish were plentiful in the water and it is supposed that what we witnessed was a method of "fishing."

Five green water snakes (*Natrix cyclopion cyclopion*) and three banded water snakes (*Natrix sipedon confluens*) were collected from our position on the bridge. All of the specimens were "fishing" in the manner described and others were observed that were not collected. The performance of all was the same except that some made slow progress forward while others weaved from side to side without changing their locations. This may have been due to concentrations of food at the points where some of the snakes were working. I have never seen an actual capture, but on two occasions while watching snakes pursue their prey in this manner, one was observed swimming toward the bank carrying a small fish. It might be assumed that the fish are caught by the snake's closing its jaws whenever the open mouth comes in contact with any object.

I did not make a similar observation until ten years later on the sixteenth of May when two water snakes (*Natrix rhombifera rhombifera* and *Natrix erythrogaster erythrogaster*) were located in a small pool of water in Dunklin County, Missouri. Both were swimming with mouths open in the irregular manner described above. When the light was focused on them, the diamond-back water snake (*N. r. rhombifera*) swam to the bank attempting to escape, but the other continued its fishing for some time. This was in an isolated pool in the St. Francois River bottoms that had resulted from the receding of flood water. The same performance was noted on the night of June first of the same year in Crawford County, Missouri when several water snakes (*Natrix sipedon sipedon*) were found in an isolated pool near a small Ozark stream. One of these snakes was persistently swimming slowly about the pool with the open mouth making long sweeps through the water from one side to the other. A large water snake (*Natrix erythrogaster transversa*) was discovered in the same act on a June night in Vernon County, Missouri in 1937. This was in a pool of water about twelve feet long, four or five feet wide, and approximately two feet deep which had resulted from the overflow of a large lake. The reptile was writhing in the water in the same manner as observed on previous occasions and slowly approaching the end of the pool where I was waiting with the light. When it reached the shallow water at the end of the pool it stopped with snout at the surface for a few seconds, probably for air and rest. Then, apparently undisturbed by the light which was kept constantly on it, the snake turned and resumed the process to the far end of the pool where it turned again, beginning another trip to the near end of the pool. On this trip it became disturbed and hurriedly swam for the bank where it was captured.

On several occasions in clear Ozark streams I have seen water snakes (*Natrix sipedon sipedon*) start this process in schools of minnows. After they made three or four sweeps with the open mouth, under these conditions, the minnows were dispersed and the snakes discontinued their efforts. It is probable that this method of obtaining food is less effective in the larger bodies of water where the prey has better opportunity for escape.

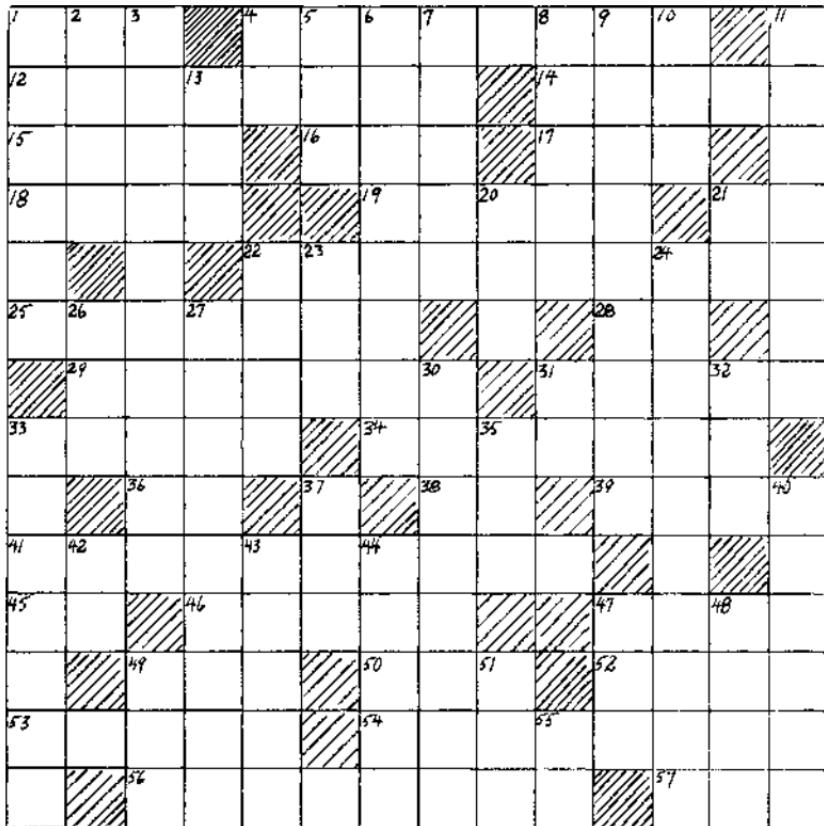
Although all of the above observations were made at night, this method of feeding is also employed in daylight. A letter from Paul Anderson of Independence, Missouri states in part as follows : "On July 30, 1933, about 11 :00 A. M., while collecting along the Little Blue River near Knobtown, Jackson County, Missouri, a small water snake (*Natrix sipedon sipedon*) was observed swimming with its head under water and mouth opened wide. It was swimming among a school of minnows, and when the mouth came in contact with one of the fish it was closed instantly. It still retained its grasp on the fish after I

caught it. Two ribbon snakes (*Thamnophis sauritus proximus*) were observed in a pool of overflow water by the Little Blue River near Lake City, Missouri. Both snakes were swimming about the small pool with mouths fully open, and as the mouth of one touched a fish it was immediately closed, capturing the fish. One of these snakes disgorged six perch and while the other did not disgorge its food its body was greatly extended. This was on August 30, 1936 about 3:00 P. M."

Stoner (Science, vol. 94, 1941, p. 367) reported a similar behavior of a water snake, apparently in daylight, in a small muddy pool of water about two feet in diameter and three or four inches deep. Dr. Stoner writes, "At short intervals the active reptile coiled, writhed and twisted its body vigorously as it moved round and round in the little pool, thus agitating the water but making no effort to leave the area. After a few seconds of this violent exertion it suddenly became quiet, usually with its head directly toward the periphery of the pool. Occasionally the snake crawled slowly about in the water apparently on the alert for small living forms that might have been dislodged from the bottom by its movements. Frequently the reptile struck at something in the debris surrounding its feeding place. This performance was repeated several times within the space of 20 minutes." His conclusion was that the activity of the snake served to free small animal forms from the mud and debris and that some of these fell prey to the reptile. This conclusion may be correct, as my own observations indicate that different methods are employed to capture some types of food. It would be interesting to know if the snake observed by Stoner kept the mouth open while writhing about the small pool of water, but this would be difficult to determine in muddy water if the head is kept below the surface.

One August night in Mississippi County, Missouri I watched a banded water snake (*Natrix sipedon confluens*) half crawling and half swimming in the shallow water at the edge of a mud bank in a cypress swamp. It repeatedly snapped at small frogs as it passed along the edge of the bank. Such food was plentiful and the snake was watched for some time as it continued along the water's edge for about thirty feet snapping at a dozen or more of the small frogs. It never seemed to hesitate long or show any determination to get any particular frog, even though some of the frogs remained in their original positions after the snake had struck and continued on its course.

Test Test Your nature *Lore*



HORIZONTAL

1. A genus of rodent
4. Helldiver
12. Family of birds
14. Remove turbidity
15. Home of the shoebill
16. A beginning
17. Tip of tail of fox
18. An amphibian
19. Nasal openings
21. Caesium (abbrev.)
22. Members of the genus *Asterias*
25. Pertaining to soil influences
28. That is
29. Enters a class
31. Referring to an *eye* part (combining form)
33. What *some* rich people do to *some* institutions
34. Gigantic (obs.)
36. A printer's measure
38. Babylonian god of sciences
39. *Gavia*, of the Gaviidae
41. Smews
45. Indium (abbrev.)

46. Academic distinction

47. Contractile diaphragm of eye

49. High, pointed hill

50. A western lizard

52. Son of Odin

53. Turn inside out

54. Member of genus *Pseudemys*

56. Mitotic period

57. A myxinoid fish

VERTICAL

1. Part of bodywall of mollusk

2. A clam

3. One of the Urodela

4. Prefix meaning double

5. Fuss and bother

6. Marine crustacean

7. A tree

8. Plural of *ictem*

9. Unpopular, as of music

10. A small cask

11. Michigan geneticist

13. To spread manure

20. County mail service (abbrev.)

21. Symbol for cerium

22. Reveal

23. Sesame

24. Instrument for measuring sunlight intensity

26. A lion's lair

27. *Antilocapra americana*

30. Bouillon (colloq.)

31. Symbol for tin

32. Combining form, pertaining to relations between animal and environment

33. Mustelids in winter pelage

35. Organ of hearing

37. A public house of lodging

40. Part of stair tread projecting beyond riser

42. Half an em

43. Major blood vessel

44. Toward the bottom of a map

47. Genus of plants

48. Bones of the pelvis

49. Beverage

51. Measures of area

55. Second tone of diatonic scale

Museum Activities



Lobby Exhibits

A display of 192 of the common weeds of the Chicago area, prepared with the able assistance of Anna Pedersen Kummer, Honorary Curator of Botany of the Academy, is occupying a portion of the lobby space. Eight adjustable panels were constructed for the purpose and herbarium specimens, protected with Lumarith, are tacked to front and back.

The exhibit has proved very popular, especially since weeds, "plants that aren't wanted—where they are," comprise the dominant vegetation of every vacant lot, and since they play such an important part in the "life or death" of a Victory Garden.

School classes especially are finding the display helpful in identifying plants which they have gathered in connection

with their work on botany. Many teachers are finding it advantageous to combine the study of plants and the study of insects in a single trip to the Academy's Museum.

Attendance

Reflecting the war effort, general attendance at the Museum has fallen off considerably from last year. During September of 1941, there were 30,520 general visitors, and during September of 1942, but 13,015. However, possibly because of special exhibits, visits of school classes show an unprecedented increase; September of last year saw 9 classes with a total of 385 students coming for study. This year during the same month there were 58 classes, with a total 1,770 students.

Staff Notes

Dr. Donald M. Hatfield, curator of mammals, has been granted leave "for the duration" to accept a position with the Kaiser Shipyards in Richmond, California. He will be engaged in the production of motion pictures and slide-films to be used in a program of visual training.

Dr. Eliot C. Williams, Jr., assistant to the director, who was given leave upon his entry into the U. S. Army Medical Corps last June, was recently promoted to the rank of corporal. Word has been received that he has transferred to the chemical warfare branch of the service and is now a cadet in officers' training at Edgewood Arsenal, Maryland.

Autumn Lecture Series

The annual autumn series of Sunday afternoon lectures begins November 1 and continues through December 20, 1942. These lectures are free to the public, but in order to eliminate confusion and give members of the Academy the benefit of seats reserved in advance, tickets will be used as in the winter series of the past season.

Members of the Academy may reserve tickets either by writing the Academy or telephoning LINcoln 0606 up to noon on the Saturday preceding the lecture, and their tickets will be held for them at the museum office until 3 o'clock, when the lecture begins. All seats in the reserved section not claimed by 3:00 P. M. will be made available to the general public.

General admission tickets will be available only on the day of the lecture, from 1:00 to 3:00 P. M. at the Museum.

The doors of the Auditorium are opened at 2:30 P. M. and closed at 3:00.

Nov. 1: **Florida Plant Life**, Dr. Verne O. Graham, Principal of Norwood Park School and Honorary Curator of Botany, Chicago Academy of Sciences.

Nov. 8: **Spring and Fall in the Woodland**, Dr. Donald T. Ries, Naturalist, Starved Rock State Park.

Nov. 15: **Are Other Worlds Inhabited?** The Reverend Frank Hancock, President, Burnham Astronomical Society, Chicago.

Nov. 22: **The Great Ice Age in Illinois**, Dr. John R. Ball, Associate Professor of Geology and Paleontology, Northwestern University and Honorary Curator of Paleontology, Chicago Academy of Sciences.

Nov. 29: **Hunting Waterfowl with Kodachrome**, Wesley F. Kubichek, Fish and Wildlife Service, U. S. Department of the Interior.

Dec. 6: **Outstanding Features of our National Parks**, John E. Doerr, Chief of Naturalists' Division, U. S. National Park Service.

Dec. 13: **The Leeward Islands of the Society Archipelago**, Dr. John T. Stark, Professor of Geology and Geography, Northwestern University.

Dec. 20: **Spirit of the Canyon**, Dr. Louis J. Tint, Chicago.

Gifts to Library

The Academy library has recently received two valuable accession s: from Charles Emerson Peet and Julia Dumke Peet, professors emeriti of Lewis Institute, a collection of several hundred volumes, including many long runs of periodicals and miscellaneous separata, chiefly geological; and through the interest of Mrs. Niles W. Leuck of the Gault Bird Club of Glen Ellyn, a large number of publications on birds from the library of the late Benjamin T. Gault, an ornithologist of long-standing in the Chicago region and a member of that renowned group of naturalists which included Ruth-ven Deane and Robert Ridgway.

We should like to remind our readers that books reviewed in *The Chicago Naturalist* may be examined in the Reading Room which is now open to the public from 2 to 5 P.M. daily, except Sunday.

George Shiras, III

A great lover of the outdoors has left us. George Shiras is gone. He was a true conservationist and a fine naturalist. This is not surprising as he came from hardy and courageous pioneer stock. His great-grandmother was a sister of Commodore Perry. In 1811 his great-grandfather floated the first steamboat on the Ohio. It was named "The Izaak Walton." His grandfather first visited the south shore of Lake Superior in the Upper Peninsula of Michigan in 1849. George Shiras, III, did not see the summer home there in Marquette until 1870 when he was eleven years old, but hardly a year passed thereafter for the next sixty-five years without his visiting this beautiful country and especially Whitefish Lake where he had been taken by an Indian guide when he was twelve and where he established his own summer home and took most of his beautiful deer pictures. Although for many years a skillful hunter with firearms, the transfer of his affections to the camera commenced in 1889, and from then on he hunted less and less with any other weapon, until finally he gave up his rifle altogether.

I think there is no doubt that he was the real pioneer in wildlife photography. Daylight methods were pursued at first and it was not until he had devised a satisfactory system to photograph wild animals at night by the use of flashlight powder that he made his greatest contributions to the art. At the Paris Exposition in 1900, the Forestry Division gave the exhibit, consisting of his pictures, the Gold Medal and Diploma and the International Jury in the Photography Division gave him their highest award, a Silver Medal. At the Louisiana Purchase Exposition in St. Louis in 1904, his photographs received the Grand Prize.

With practically no exceptions, his pictures have been of animals in their natural state and not in parks or preserves. Altogether, during his many years of hunting with a camera, Mr. Shiras accumulated some twenty-four hundred negatives which he lodged with the National Geographic Society.

But he was not only distinguished for his work in this field. He was a lawyer of marked ability, practicing his profession in Pittsburgh for many years, a member of the Pennsylvania Legislature and from 1903 to 1905 was a member of the Congress of the United States. He it was who prepared and introduced the Migratory Bird Bill and fought stoutly in favor of control of the pollution of interstate waterways. In Michigan he sponsored the gun law which bears his name and passed the legislature in 1925. And the adoption of the buck law was due in no small measure to his active and earnest support.

It is a real pleasure for one who knew him slightly to record that his friendly interest in those seeking to emulate him and his generosity in giving aid and making helpful suggestions knew no bounds.

From 1905 to the day of his death he devoted his time exclusively to the conservation of wildlife and to other governmental problems. Though he had long since given up the use of firearms, he wrote in his splendid book "Hunting Wildlife with Camera and Flashlight," published by the National Geographic Society, "The millions of devotees of the rod and gun represent, as a whole, one of the largest and best elements in our citizenry." There is none to take his place.

Tappan Gregory

(Reprinted with permission from *Outdoor America*.)

The Naturalist's Book

NESTING BIRDS AND THE VEGETATION SUBSTRATE

By W. J. Beecher

Chicago Ornithological Society, Chicago, 1942, 69 pages, 1 photo, 10 figures, 2 tables. \$1.00. Distributed by Field Museum, Chicago.

This paper, rather imposingly bound in cloth, is a report of a summer's study of an area 482 acres in extent in the vicinity of Fox Lake, Lake County, Illinois. The author's purpose was to ascertain "the broader biotic relationships between nesting birds and their plant environment." To this end he evaluated the physiographic influences at work, and, using an aerial survey photograph, carefully mapped the vegetational cover types. Habitats varied from upland to marsh and from "wild" to fully cultivated land. He examined over 1200 nests, keeping locality records and breeding data for each. Through this work he was able to measure the beneficial effect of edges (between vegetational types) on the breeding bird population—a principle accepted by practicing wildlife managers for some years.

Mr. Beecher has assembled material and presented a report which will serve as a basis for further more extensive investigations. Although some of his conclusions apparently are founded on too scanty data, and he sometimes presents as facts matters of controversial nature, he has done a good piece of work. It is assumed that this is in the nature of a progress report, since it covers such a short span of time, and it is to be hoped that the author will proceed with his investigations at some future date.

Donald M. Hatfield

COLLEGE ENTOMOLOGY

By E. O. Essig

The Macmillan Co., New York, 1942, vii - 900 pages 308 figures. \$5.00.

This is one of those encyclopaedic texts which makes the beginning student gasp in wonder at the amount of material encompassed by the seemingly simple study of "bugs." The first fifty-eight pages are concerned with generalizations about the biology of insects. The remainder of the text is taken up by a key to the orders of insects, and separate chapters devoted to each of the orders. For many of the groups the common name, the French and German names and the derivation of the family name are given. New diagrams and drawings will interest the experienced worker who may have grown weary of the old drawings—especially those with errors. Excellent bibliographies are included at the end of each chapter. The numerous keys, illustrated by many drawings, add immeasurably to the value of the book for the teacher and specialist, as well as for the beginner and amateur. Another valuable attribute is the attempt at uniform treatment of each order. The order is first characterized in a paragraph which is followed by a table of salient external and internal features. Following these are keys to and discussions of the major families.

Donald C. Lowrie

BIRDS AT HOME

By Marguerite Henry

Illustrated by J. B. Abbott

M. A. Donohue and Company, New York, 1942, 88 pages, 12 color plates, numerous line drawings, 10 x 12 inches. \$1.25.

A thoroughly charming book, this is designed for children, but as the jacket advertisement states, the whole family

will enjoy it. There are here none of the saccharine phrases found in some juvenile books that so obviously attempt to reach the "sweet, sweet, little children." Instead, with a straightforward style, an excellent sense of humor, and an almost uncanny ability to transform dull facts into entertaining tidbits, Mrs. Henry has written a book to hold the interest of the young reader throughout.

Mr. Abbott's contribution, the twelve excellent color plates and many sketches of nests, singing birds, etc., is outstanding. The colors are good and, aside from a certain indefinable stiffness which sometimes appears, the illustrations seem to indicate that the artist has somewhat more than a mere passing acquaintance with the birds which he has portrayed.

The binding seems serviceable, as though it would stand up under a moderate amount of rough treatment, and the print is large and well-spaced.

Donald M. Hatfield

A GENERAL SCIENCE WORKBOOK

By D. F. Weidner

Jaques Cattell Press. Lancaster, Pa., 1942, 216 pages, numerous illust. Spiral bound, paper covers. \$1.00.

For high school general science classes, this workbook is arranged on the unit plan, divided into two semesters. Titles of some of the units are: The Solar System, Weather and Climate, Transportation, Light. To encourage thinking along scientific lines, questions are asked throughout the book, e.g., "What is a dynamo?" "Is any surface perfectly smooth?" and so on. There is a list of references at the end of each unit.

Donald M. Hatfield

ECOLOGICAL CROP GEOGRAPHY

By Karl H. W. Klages

The Macmillan Company, New York. 1942, 128 pages, 66 tables, and 108 figures. \$4.50.

By the author's own confession this book has been twenty years in the making. Obviously the literature has been thoughtfully noted and considered. Only minimally essential material is presented, often by direct quotations; that which could be done without has been fastidiously omitted. The first portion of the book seems overweighted with authorities of the last century and the first quarter of this. Apparently the subject's basic concepts were clear to scientists of that period who lacked the tools for substantiation which we now have. The specific aspects of ecological crop geography are brought smartly up to date in the latter and major portion of the book which treats of applications.

The first part of the text deals with a concept which is new at least to the layman and non-geographer, viz., the plain fact that there is a man-land ratio upon which the welfare of society depends. Within part two is condensed a discussion of the physiologic environment of crop plants, problems enough to occupy many volumes. Extreme diligence in presenting the entire history and theory, even the foreign language and outmoded references, may conceivably discourage the modern hard-pressed student. He will depend upon the skillfully organized text material.

Part three, entitled ecological factors, assembles much that has not previously been gathered together in one book with proper interpretation and supplementation. Part four deals with the geographical distribution of crop plants, the largest section in terms of pages and yet as compact and meaty as the rest of the book.

Anna Pedersen Kummer

ORNITHOLOGISTS OF THE
U. S. ARMY MEDICAL CORPS

By Edgar Erskine Hume

The Johns Hopkins Press, Baltimore, 1942, 583 pages,
109 illust., \$5.00.

This is a collection of biographical essays on thirty-six members of the U. S. Army Medical Corps who have made outstanding contributions to the study of ornithology. Some of these surgeon-naturalists have already been the subjects of biographical memoirs, but this work, compiled chiefly from unpublished material, including data from the archives of the Army Medical Corps, adds many interesting details heretofore not publicly known.

Among these naturalists are some who were chiefly explorers and collectors and some who have made scholarly contributions to science and literature. Their names occur so frequently, not only in ornithology but in mammalogy, herpetology, and other fields, that the student who is even mildly interested in the history of his specialty can not resist the desire to know something of the personalities they represent.

Present-day taxonomists will find interesting and useful descriptions of early army posts, non-extant for decades, which are known to them chiefly as the localities of type specimens. There are quotations from letters, original journals and field notes which reveal the difficulties of collecting and preparing specimens and transporting them to suitable repositories before the days of railroads. There are quotations from published works showing the style of writing and the precision and skill with which these men recorded their observations. Source material used by the author is listed at the end of each biography.

Special tribute is paid to Spencer Fullerton Baird who, as assistant secretary of the Smithsonian Institution, did much to facilitate and encourage the activities of naturalists during the period of the exploration of the West.

The illustrations consist of portraits (excellently reproduced, for the most part); views of early forts and cantonments; facsimiles of journals and title pages of important publications; drawings showing the skill of certain of these men as delineators; and other subjects relevant to their lives.

Colonel Hume has skilfully avoided dullness in presenting purely factual data and has used good taste in selecting material for quotation. The book is printed throughout on highly glossed paper and bound in unbleached linen. It will be read with enjoyment by historically-minded students and scholars and its usefulness will extend many years into the future.

H. K. Gloyd.

INTRODUCTION TO
THE STUDY OF ALGAE

By V. J. Chapman

Cambridge: at the University Press, New York.
The Macmillan Company, New York, 1941, 378 pages,
24 tables, and 209 figures. \$3.75.

Written for use as a textbook in phycology by first year university students or in its entirety by advanced workers, this volume will nevertheless gather up proselytes from among all botanists. The text is at once understandable, stimulating, and scholarly. The line drawings delineate all observed forms and reproductive processes of selected algae together with helpful tables and diagrams. Stereotyped format has been avoided. *Vaucheria*, the teaching value of which has been suspected for so long is finally put in its place.

There are chapters on reproduction, evolution, and fossil forms. Physiology, symbiosis, and soil algae receive coordinated treatment that the student can readily get without recourse to many references which may or may not be in the library. Some seventy pages are devoted to marine and fresh water ecology and to other ecological considerations, source material most welcome to the ecologist.

Anna Pedersen Kummer

Notes from the Field

A NESTING RENDEZVOUS OF THE MUSK TURTLE

While employed as naturalist during the past summer at Camp Mac Lean near Burlington, Racine County, Wisconsin, I had opportunity for making some interesting observations on the nesting habits of the musk turtle, *Sternotherus odoratus* (Latreille). At Rockland Lake on August 12, 1942, in an old duck blind extending over the water, 130 eggs were found. They were buried in debris consisting of straw and rotting wood that had accumulated through the years on the floor of the blind.

The blind was 77 inches long, 74 inches wide, and about three feet high. The only entrance accessible to the turtles was at the back which opened on dry land. The back half was covered with boards and the side toward the lake was open, allowing the sun to warm the floor during most of the morning. Thus the heat of the sun, in addition to the heat from the rotting debris, furnished warmth for the eggs.

Before the nesting site was disturbed special care was taken to look for signs of predators but none were found. Fifteen eggs picked at random were measured. In length they ranged from 24 to 29 mm. (average 26.9) and in width, from 15 to 17 mm. (average 15.8).

On August 17 an egg was opened and the embryo found to be fairly well developed. It was a perfect replica of the adult turtle with the exception of the hind feet which had not yet grown toe-nails.

Richard A. Edgren, Jr.

THE SPRING PEEPER IN THE PALOS HILLS AREA, COOK COUNTY, ILL.

During a field meeting of the Amateur Herpetologists' Club of Chicago on September 6, 1942, eleven specimens of the spring peeper (*Hyla crucifer* Wied) were captured in dry leaves at the bottom and on the sides of a small ravine leading down to Maple Lake, near Willow Springs. These are believed to represent the first record of this species in Cook County.

It is unusual to find these frogs in such numbers during the summer or early fall. Although common in spring, as their name indicates, they aestivate later in the season and are then seldom seen.

Walter T. Stille, Jr.

Richard A. Edgren, Jr.

Test Your *nature Lore*

Solution to puzzle on page 56.

M	U	S		D	A	B	C	H	I	C	K	C
A	I	N	A	T	I	D	A	E	C	-	E	A
N	I	L	E			O	R	D	T	A	G	I
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L	M	I	S	T	T	A	R	E	I	S	H	E
E	D	A	P	H	I	I	C	D	I	E	-	E
E	N	R	O	L	L	S		S	C	L	E	R
E	N	D	W	E	E	T	E	N	A	I	C	
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I	N	H	O	N	O	R			I	R	I	S
N	T	O	I	R	U	T	A		V	A	L	I
E	V	E	R	T	E	R	R	A	P	I	N	
S	C	A	N	A	P	H	A	S	E		H	A

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